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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,838	01/24/2002	Franz Laermer	10191/808	1541

26646 7590 07/30/2003

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EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,838

Applicant(s)

LAERMER ET AL.

Examiner

Allan W. Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-24 and 26-34 is/are rejected.
- 7) ☒ Claim(s) 25 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: _____

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DETAILED ACTION

Claim Objections

Claims 15 and 21 are objected to because of the following informalities:

In the last two lines of claim 15, the words "is modulated" should be deleted;

In claim 21, "mHz" should be MHz". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 17-24 and 26-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuwabara So et al. in Japanese Patent Publication 09-232738 (hereinafter, So).

So teaches etching a substrate with a plasma generated with energy coupled from 300 watts of 13.56 MHz RF energy. So teaches pulsing the 300 watts of 13.56 MHz RF power by on-off modulating the RF energy with an on-off, or pulsation frequency of 68 kHz. So teaches using a duty ratio of 50 % or a 1:1 mark-to-space ratio, wherein the packets of RF energy that are provided during the on periods have a square wave form. So teaches an additional layer of modulation such that the above described frequency modulation is subjected to a 1000 Hz on-off modulation with a 50 % duty ratio (or 1:1 mark-to-space ratio). See example 2, page 3 and figure 2a-2c.

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Claims 15-17, 20-23, 28, 29, 32-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsuta Yoshie et al. in Japanese Patent Publication 06-342770 (hereinafter, Yoshie).

Yoshie teaches a method for anisotropically etching silicon with a plasma generated with energy coupled from 180 watts of 13.56 MHz RF energy. Yoshie teaches pulsing the 180 watts of 13.56 MHz RF power by on-off modulating the RF power. Yoshie teaches using a duty ratio of 80 % or a 4:1 mark-to-space ratio. Yoshie teaches providing an additional layer of modulation such that the frequency modulation described above is further on-off modulated with a 67 % duty ratio (or 2:1 mark-to-space ratio). See page 4 paragraph [0020] and figure 3.

Allowable Subject Matter

Claims 25 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 703-306-9075. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Mills, can be reached on 703-308-1633. The general fax numbers for TC1700 are 703-872-9310 (non-after finals) and 703-872-9311(after-final). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Allan Olsen, Ph.D.
July 16, 2003

